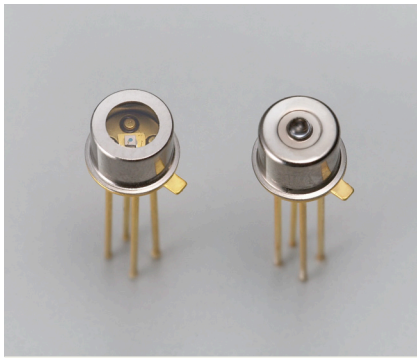


# InGaAs PIN photodiode with preamp



G9820 series

**TO-46 package, 1.3/1.55  $\mu\text{m}$ , 2.5 Gbps**

G9820 series is a family of high-speed receivers specifically developed for 1.3/1.55  $\mu\text{m}$  band optical fiber communications. These devices incorporate a high-speed, high-sensitivity InGaAs PIN photodiode integrated with a high-speed preamp, allowing easy connection to a latter-stage circuit. Lens window types are also available for efficient and easy coupling to an optical fiber.

## Features

- High-speed response
- High gain with AGC (Auto Gain Control)
- Low power supply voltage: 3.3 V
- Differential output
- Sensitivity: -25.5 to +1 dBm

## Applications

- Optical fiber communications
- Fiber channel
- Gigabit Ethernet
- SDH/SONET (STM-16/OC-48)

## Absolute maximum ratings

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5, +5.0	V
Operation temperature *1	Topr	-40 to +85	$^{\circ}\text{C}$
Storage temperature *1	Tstg	-40 to +85	$^{\circ}\text{C}$

\*1: No condensation

## Electrical and optical characteristics

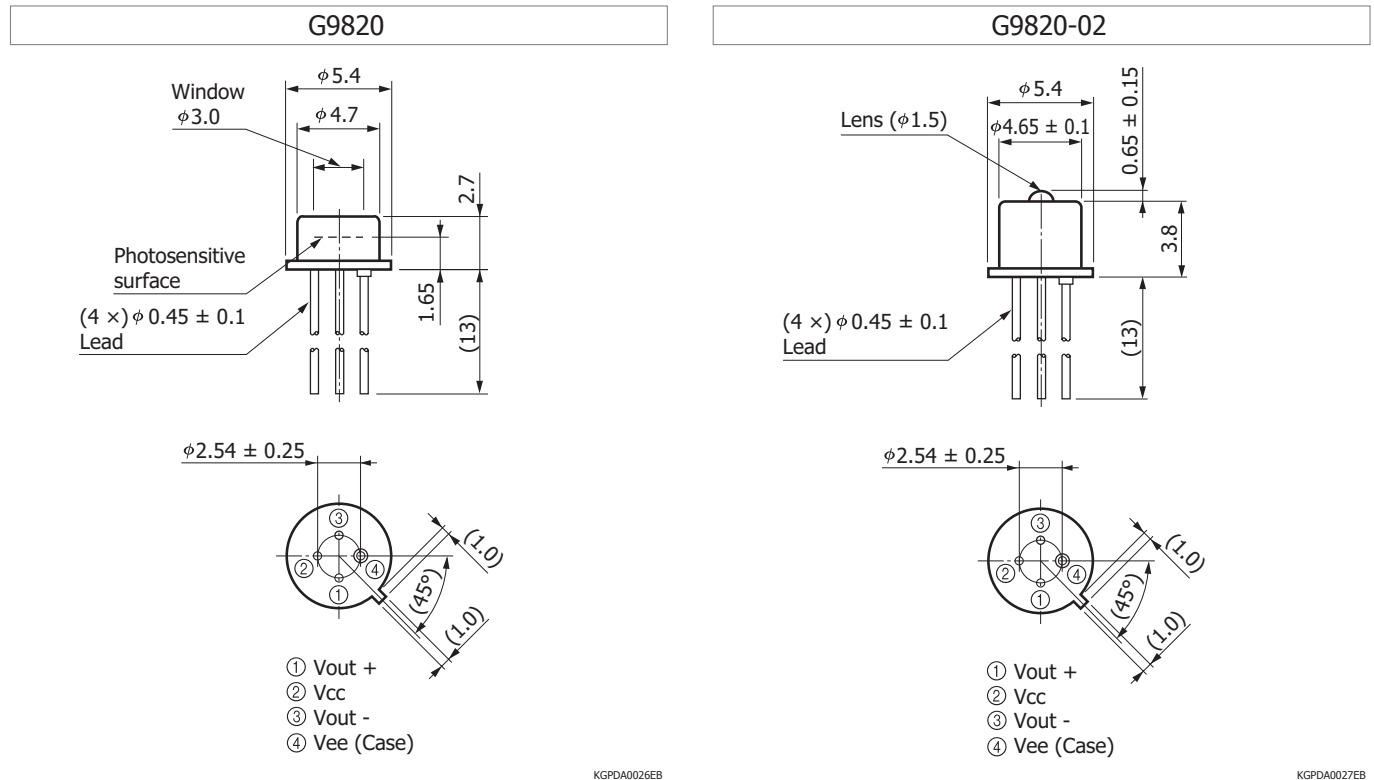
(Ta=25  $^{\circ}\text{C}$ , Vcc=3.3 V, Vee=0 V, RL=50  $\Omega$  \*2,  $\lambda$ =1.31  $\mu\text{m}$ , unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photo sensitivity	S	Pin= -22 dBm *2 *3	1.0	1.5	-	V/mW
Supply current	Icc	Dark state, RL= $\infty$	-	45	60	mA
Output bias voltage	Vo	Dark state, RL= $\infty$	-	3.0	-	V
Cutoff frequency	fc	Pin= -22 dBm, -3 dB *2	1.7	2.1	-	GHz
Low cutoff frequency	fc-L	Pin= -22 dBm, -3 dB	-	3.0	-	kHz
Noise equivalent power	NEP	Dark state, to 1875 MHz, *2 *3	-	310	500	nWrms
Minimum receivable sensitivity	Pmin	2.5 Gbps, PRBS=2 <sup>23</sup> -1 BER=10 <sup>-10</sup>	-	-25.5	-23.5	dBm
Maximum receivable sensitivity	Pmax	Extinction ratio=10 dB	+1	-	-	
Output impedance	Rout		40	50	60	$\Omega$

\*2: Output: capacitive coupling

\*3: Single-ended (Vout+) measurement

### Dimensional outlines (unit: mm, tolerance unless otherwise noted: $\pm 0.2$ )



### Related information

[www.hamamatsu.com/sp/ssd/doc\\_en.html](http://www.hamamatsu.com/sp/ssd/doc_en.html)

#### Precautions

- Disclaimer
- Metal, ceramic, plastic package products

#### Technical information

- Infrared detectors

Information described in this material is current as of September 2017.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

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